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Backyard swine production in Northern Negros: Demographics, management, and issues

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ABSTRACT

The main objective of this research is determination of the situation of backyard swine production in northern Negros by describing the socio-demographic characteristics of backyard swine raisers in the said area; identifying the management practices they employed and the common issues they encountered in backyard swine production. A survey was conducted in the three cities and municipalities in the 2nd district of Negros Occidental which include Sagay, Cadiz, and Manapla from January to March 2022. Utilizing a questionnaire, a total of 339 respondents were interviewed on different aspects of socio-demographics, management practices, and issues confronted in backyard swine production. The data were analyzed and interpreted using the frequencies and percentages through the Statistical Package for Social Sciences (SPSS). In the aspect of socio-demographic profile, the majority of the backyard swine raisers in the 2nd district of Negros Occidental were females, were primarily housewives, and have not attended any seminar or training related to swine raising. In terms of their management practices, the majority provide commercial feeds, provide concrete housing, and practice vitamin-mineral supplementation. The majority preferred to raise fattening pigs and those who practiced breeding preferred natural mating in breeding the sow. Respondents also indicated that scours is the primary cause of piglet mortality and the respiratory problem is the leading disease observed in growing and adult pigs. The major constraints faced by the respondents include expensive commercial feeds, the low market value of pigs, and the lack of sure buyers at the time of harvest, which often resulted in no profit. Despite the problems encountered, most backyard swine raisers manage to find alternative solutions to these problems to sustain production.

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INTRODUCTION

In the Philippines, backyard swine raising is defined as a small farm with less than 20 pigs. Backyard swine farmers have been defined as household units that make up most of the farm labor supply and, usually, much of the capital (Steinfeld, 1998). They have meager resources of labor and capital, and often, they are not able to obtain a regular and enough supply of food or sustainable income and standard of living (FAO-UNESCO, 2002).

Swine production in the Philippines is commonly dominated by a backyard swine operation. In the swine inventory as of January 2019, the estimated swine population was 12.71 million heads. The backyard sector produced 8.17 million heads, or 64 percent of the estimated swine production (PSA, 2019). Despite being the most significant contributor to total swine production in the country, the backyard swine production is declining; Catelo (2017) cited that the percentage of backyard swine raisers has been consistently decreasing in the year 2000 because of intensification or commercialization of swine production. Moreover, because of the small-scale operation, the Filipino backyard raisers face issues with access to resources such as production inputs, technical and veterinary services, facilities, loans, and effective market (Maharjan & Fradejas, 2005). However, due to the reality that the backyard swine enterprise is still regarded as the foundation of rural economies, backyard swine raisers should be supported largely so that sustainable production growth can be attained.

It is crucial that the situation of the backyard swine production, a major player to the country's livestock business, should be assessed in order to improve the swine industry un the Philippines. There are only limited studies that have been reported and published about the demographics, management, and issues in backyard swine production in the 2nd district of Negros Occidental; therefore the primary drive of this research is to gather data about specific aspects of backyard swine production in northern Negros.

OBJECTIVES OF THE STUDY

The study aims to describe the socio-demographic characteristics of backyard swine raisers in the 2nd district of Negros Occidental; identify the management practices employed by the backyard swine raisers in the said area and; identify the common issues in backyard swine production and the solutions applied by swine raisers in dealing with such issues.

MATERIALS AND METHODS

Research Locale and Design

This study was conducted in the 2nd district of Negros Occidental, covering the cities of Sagay and Cadiz and the Municipality of Manapla. A descriptive method was used in this study utilizing a questionnaire and supplemented with scheduled interviews. Because there was no actual list of the small-scale hog growers in the second district of Negros Occidental, the number of households in the three localities obtained from the Philippine Statistics Authority (2016) was used as the sample population. The sample size was calculated using Slovin's formula, and the required total sample size is 398 respondents based on the number of households per city or municipality (Appendix 2). The sample size for each city/municipality was proportionately allocated based on the number of barangays each city/municipality have. Slovin's formula is written as $n = N/(1 + Ne^2)$, where: n= Number of respondents; N= Total number of households of District II Negros Occidental (82, 193); e= Error tolerance (in this study e=5%). To identify the survey participants, the researchers ask help from the barangay council to locate backyard swine raisers in the area.

Research Instrument

The instrument used in gathering data was a survey questionnaire, which was constructed based on the study of Armenia et al. (2016) and Begum et al. (2014). It was composed of three parts; the first part covered the socio-demographic profile of the respondents, and the second section covered the management practices applied by the respondents in their backyard swine production. The third part was about the issues encountered by swine raisers and the solutions they applied. The research instrument was written in English and translated into "Hiligaynon" for better understanding and to get the relevant data from the respondents. Next, the questionnaire was assessed and corrected by the panel of experts and the Research and Development office of NONESCOST before the conduct of the survey with an overall validity rating of 4.3/5 (Appendix 2).

Data Collection Procedure

Backyard swine farms are any farm or family who raises 1 to 20 heads of growing-finishing pigs, according to PSA (2016). Taking after this description, the respondents in this study are the hog raisers in the 2nd district of Negros Occidental, raising 1-20 heads of growing-finishing pigs. The proportionately allocated sample size in each city or municipality (Appendix 1) was divided according to the number of barangays it consists of, then it was ensured that the respondents came from different puroks to make sure that the population is well-represented by the sample. Coordination with the Barangay Captains of the selected research sites was done for the smooth conduct of the interview. A letter of request with the sign of the adviser was presented to the barangay officials before conducting an interview. Due to Covid-19, the health protocols were strictly followed by the researchers before entering the locations. The researchers explained the purpose of the survey, and with respondents' consent, the interview was done using the questionnaire. After interviewing the target respondents of the research, the researchers study, tally, and analyze the data collected to obtain the needed result.

Response to the Interview

Out of the 398 required sample size, the study had reached a total of 339 respondents or an 85% response rate, which exceeded the conservative requirement of 70% (Thrushfield, 2005) as cited by Andico & Peña (2019), ensuring that the data was sufficient for reliable evaluation. The remaining respondents were unable to complete the interview due to the following circumstances: 1) no pigs were raised near commercial buildings in the Poblacion area, and 2) some barangays were situated too far from the city.

Statistical Data Analysis

The data were grouped and analyzed according to the objectives of the study. Descriptive statistics using frequency counts and percentages were used to describe the results. In this study, the IBM Statistical Package for the Social Sciences (SPSS) software, which is used by various kinds of researchers for complex statistical analysis, was utilized in analyzing the data collected to obtain accurate statistical results.

RESULTS AND DISCUSSION

Respondents' Profile

Socio-demographic characteristics. The results showed that the respondents' average age was 48 years, with the youngest being 20 years old and the oldest being 81 years old. A large percentage of the respondents were female, comprising 55.46 % of the total respondents. While in Surigao del Sur, more males engaged in backyard swine production because this venture is labor-intensive; hence physical exertion and heavier tasks were entrusted to males (Armenia et al., 2016). Most of the respondents in this study were married (82.01%). The implementation of new technologies by farmers is usually anticipated to be directly influenced by education. The ability of the farmers to collect, comprehend, and use information that is critical to their decision to utilize the technology has increased

(Mignouna et al., 2011). According to the findings of this survey, 30.97% of the respondents had graduated high school, 12.39% had reached college, 8.85% were college graduates, and 4.72% had completed vocational courses. Since most of the respondents were high school graduates, it implies that most of them are capable of understanding and applying basic knowledge of swine production.

The respondents were mainly housewives comprising 29.20% of the respondents. Moreover, the majority of the respondents (58.41%) had an estimated monthly family income which is below 10,000.00 pesos. Household income is a crucial aspect in swine raising since it has a huge influence on raiser's decisions to continue backyard swine farming. Sometimes, hog farmers are forced to temporarily stop their activity because of the deficiency of fund to support their enterprise (Perey, 2016). In this study, respondents also admitted that insufficient income limits them from raising more hogs and sometimes forces them to stop the operation. Most of the respondents were still new to this venture, 52.21% of the total respondents admitted that they raised swine for just about 1 to 5 years.

Table 1. Socio-Demographic Profile of the Backyard Swine Raisers in 2nd District of Negros Occidental.

Variable	Category	Frequency n=339	Percentage (%)
Sex	Male	151	44.54
	Female	188	55.46
Civil Status	Single	38	11.21
	Married	278	82.01
	Widow/Widower	23	6.78
Educational Attainment	Elementary level	43	12.68
	Elementary Graduate	54	15.93
	High School Level	49	14.45
	High School Graduate	105	30.97
	Vocational	16	4.73
	College level	42	12.39
	College Graduate	30	8.85
Occupation	Housewife	99	29.20
	Hog Raiser	75	22.12
	Vendor	42	12.39
	Government Employed	27	7.96
	Laborer	13	3.83
	Farmer	24	7.10
	Driver	38	11.21
	Fisherman	9	2.65
	Others	12	3.54
Estimated Monthly Family Income	Below 10,000.00	198	58.41
	10,000.00-19,000.00	107	31.56
	20,000.00-29,000.00	26	7.67
	20,000.00-39,000.00	3	0.88
	40,000.00-49,000.00	3	0.88
	50,000 and above	2	0.60
No. of Years in Swine Raising	1-5 years	177	52.21
	6-10 years	80	23.61
	11-15 years	35	10.32
	16-20 years	18	5.31
	21-25 years	20	5.90
	26-30 years	4	1.18
	31-40 years	5	1.47

Table 2. Topics of the Relevant Seminars Attended by the Respondents and their Reasons for Engaging Backyard Swine Production.

Variable	Category	Frequency n=339	Percentage (%)
Relevant seminars attended	Feeding Program	62	18.29
	Fattening Production	11	3.24
	Breeding Management	5	1.47
	Piglets caring	9	2.65
	Swine Production	17	5.01
	Farrowing	10	2.95
	Others	22	6.49
	None	203	59.88
Reasons for engaging backyard swine production	To have an additional source of income	136	40.12
	Savings	75	22.12
	Family's primary source of income/livelihood	74	21.83
	To support children's study	39	11.50
	Hobby	15	4.42

Table 2 reflects the relevant seminars/training attended by the respondents and their reasons for engaging in backyard swine production. A total of 136 respondents agree that they have attended seminars related to swine raising, and 18.29% have attended feeding programs. According to them, this topic was mainly conducted by the feed companies. The majority of the respondents (59.88%) have not attended any seminar or training related to swine raising.

Out of 339 respondents, 136 (40.12%) admitted that the main reason they raised pigs was to have an additional source of income to support their family's needs. The other reasons why they engaged in this venture are the following: as savings (22.12%), as the family's primary source of income (21.83%), to support children's studies (11.50%), and as a hobby (4.42%). These reasons are similar to the claims of Villar et al. (2002) that backyard swine raisers in the Philippines keep pigs as their "saving bank" to sustain their basic needs and for other specific purposes such as educational expenses for their children, food for special occasions, emergency needs, and as a secondary source of income.

Management Practices

Feeding Management

Table 3 presents the following feeding management practices of the backyard swine raisers. Most of the respondents in this study practice trough feeding over floor feeding. Supnet (1978), as cited by Armenia et al. (2016), stated that trough feeding preferable compared to floor feeding for the reason that it reduces feed waste and spoilage. If the feeding trough's design prevents the pigs from strolling, lying, urinating, or defecating in it, the trough need not be expensive. In such a manner, the feeds of the pig will not be contaminated. Only a few respondents practice floor feeding because according to them, this method mainly results in more wastage and is unsanitary to the pigs.

The majority of the respondents believe that their pigs grow and gain weight faster when given commercial feeds; thus 78.47% of them use commercial feeds in feeding their swine, and 20.06% use a combination of commercial feeds, swill, and crop residues. The remaining respondents (1.47%) fed their pigs with swill and crop residues. According to the Philippine College of Swine Practitioners (2020), swill feeding is a famous method for giving hogs high-protein diet, but it also poses a threat like exposure to infections that can lead to diseases like African Swine Fever and Foot and Mouth Disease, thus, attention should be given when using feed wastes in feeding. In most cases, the feeding method practiced was wet feeding (64.31%) and the majority of them feed their swine three times a day (79.65%).

Table 3. Feeding Management Practices of the Respondents by Manner of Feeding, Type of Feeds, Methods of Feeding, and Frequency of Feeding.

Variable	Category	Frequency n=339	Percentage (%)
Manner of feeding	Feeding trough	298	87.91
	Floor feeding	41	12.09
Type of feeds given	Predominantly commercial feeds	266	78.47
	Predominantly Swill	2	0.59
	Predominantly crop residues	3	0.88
	Combination	68	20.06
Method of feeding	Wet feeding	218	64.31
	Dry feeding	111	32.74
	Both	10	2.95
Frequency of feeding	Once	5	1.47
	Twice	52	15.34
	Thrice	270	79.65
	More than 3x	12	3.54

Housing Management

Table 4 shows the housing management practices of the respondents. In constructing a piggery, the Housing and Land Use Regulatory Board (2000) recommended that the piggery must be situated preferably in a rolling terrain to have good drainage. Piggeries, either small, medium, or large scale, must not be constructed in flood-prone areas and other environmentally critical areas like watersheds and sources of water supply to prevent contamination. The study showed that most of the piggeries were located in lowland areas (55.16%). Some piggeries were situated in coastal areas (22.12%), and near a stream or river (19.76%), which is not advisable because the Phosphorus and Nitrogen in hog wastes are significant pollutants in water. These two elements can cause eutrophication while Phosphorus is acutely toxic to fish (Okun, 1997). Other piggeries were in upland areas (2.95%).

All respondents agree that they put their pigs in a pen and do not practice tethering. The pigs have a shed to protect them from extreme temperatures and bad weather conditions. The floor of the pigpen was usually made of concrete (93.81%), wooden (5.60%), and bamboo (0.59%). The roof was mainly galvanized iron (57.82%), but some were made of Nipa (38.35%), Tarpaulin (3.54%), and Cogon grass (0.29%).

Table 4. Housing Management Practices of the Respondents by Location of Piggery, Methods of Restrains, Shelter Used, Roofing, and Flooring of their Pigpen.

	Variable	Category	Frequency n=339	Percentage (%)
Health	Location of piggery	Upland	10	2.96
		Lowland	187	55.16
		Coastal	75	22.12
		Near a stream or river	67	19.76
	Method of restraining	Pens	339	100.00
		Tethering	0	0
	Shelter used	Shed	339	100.00
		Beneath the House	0	0
	Floor of pigpen	Wooden	19	5.60
		Concrete	318	93.81
		Bamboo	2	0.59
	Roof of pigpen	Corrugated	196	57.82
		Nipa	130	38.35
		Cogon grass	1	0.29
		Tarpaulin	12	3.54

Management

The procedures of the respondents in managing swine's health are shown in Table 5. The metabolic processes that are important for the growth, development, and maintenance of the pigs involve vitamins and minerals. Supplementation is vital to meet the requirements of the pigs because the level of inclusion of some vitamins and minerals in pig's commercial diets is not met (Menegat et al., 2019). The study revealed that the majority (95.87%) of the backyard swine raisers provide vitamin-mineral supplements to their swine, which is usually in the form of water-soluble powder. While the remaining 4.13 percent of the respondents did not provide vitamin-mineral supplements.

Only 41.59% of the total respondents provide iron supplements since most of them do not own a sow, they buy weaned piglets that are already provided with iron supplements by the owner of the sow before weaning. Respondents prefer iron injection to oral iron supplementation because this type of administration ensures each piglet gets the exact iron dose it needs. Oral administration of iron requires multiple doses to piglets to prevent iron deficiency anemia (Loh et al., 2001), which is not economical for the hog raisers. Many respondents deworm their pigs to keep their animals free from parasites. Usually, the swine raisers administer a dewormer orally because they find this method more manageable and less stressful for the pigs than through injection.

Table 5. Health Management Practices of the Respondents in Terms of Vitamin-Mineral Supplementation, Iron Supplementation, Method of Iron Administration, Deworming, and Method of Deworming.

Variables	Category	Frequency n=339	Percentage (%)
Provide Vitamin-Mineral Supplements	Yes	325	95.87
	No	14	4.13
Provide Iron Supplements	Yes	141	41.59
	No	198	58.41
Method of Administration	Iron injection	130	38.35
	Oral iron supplementation	11	3.24
	None	198	58.41
Practice Deworming	Yes	288	84.96

	No	51	15.04
Method of Deworming	Oral	177	52.21
	Injection	71	20.94
	Both	42	12.39
	None	49	14.45

Table 6 presents the continuation of the health management practices of the respondents. Death of piglets is an issue that is caused by several factors (Edwards, 2002). Olsson, et al., (2018) reported that hunger or crushing by the sow, i.e., non-infectious factors, explain most of the untimely death of the piglets. It contradicts the result of this study because the mortality of piglets experienced by the respondents is mainly caused by diarrhea (43.07%). The discrepancy between the results of the two studies might be affected by the age of piglets because, in this study, piglet mortality includes all causes of piglet death from birth until after the weaning period. This is why diarrhea was observed as the leading cause of piglet mortality. The most common disease noticed by most respondents in growing and adult pigs is a respiratory-related disease (48.38%). Usually, the signs noticed by the respondents include but are not limited to cough, increase in breathing rate, sneezing, and nasal discharge.

When a disease occurs, the majority of the respondents call an animal technician (68.44%) to ask for assistance in providing treatment to the sick animal. Nevertheless, some of the respondents treat their swine by themselves (25.07%), and others report to a veterinarian (5.90%) to seek professional veterinary services. When animals cannot survive the disease and die, 98.23 percent of the respondent bury the dead animals. Environment and food safety can be compromised due to inappropriate procedure of disposing dead animals (Chen et al., 2017).

Table 6. Cause of piglet Mortality, Diseased Noticed on Growing and Adult Pigs, Action Taken during Disease Occurrence, ad Disposal of Dead Animals.

Variables	Category	Frequency n=339	Percentage (%)
Main cause of piglet mortality	Cold Stress	75	22.12
	Diarrhea	146	43.07
	Crushing by the mother	53	15.63
	Fever	8	2.36
	Unmedicated	18	5.31
	Respiratory problems	6	1.77
	None	33	9.73
Major diseases noticed in growing and adult pigs	Swine Fever	67	19.76
	Skin problems	35	10.32
	Respiratory problems	164	48.38
	Diarrhea	53	15.63
	Others	20	5.90
Action taken during disease occurrence	Report to Veterinarian	20	5.90
	Call an animal technician	232	68.44
	Do self-medication	85	25.07
	Indigenous method	2	0.59
Disposal of dead pigs	Buried	333	98.23
	Thrown	4	1.18
	Consumed	2	0.59

Breeding/Production Management

Based on Table 7, about 60.48 percent preferred to raise fattening pigs because, according to them, this type of pig is easier to manage than breeders. About 25.66% raised fattening and breeder pigs, while only 13.86% raised breeders alone. In breeding pigs, natural mating is widely used by the respondents (80.60%), but some utilized artificial insemination (19.40%). Natural mating is convenient because it allows for maximum boar use and more precise breeding dates (Lammers et al., 2007). Artificial Insemination (AI) is poorly accepted by Filipino farmers because of several reasons such as lack of technical know-how, lack of equipment, inability to process and preserve semen, and low conception rates and litter sizes (Baguio, 1994). However, Am-in et al. (2009) claimed that sow performance on small-holder farms would improve if artificial insemination is utilized. AI offers more advantages than natural breeding method because it can impregnate many dams in one ejaculate, as reported by Bearden et al. (1997) cited by Armenia et al. (2016). Out of 134 respondents who practice breeding, only 15.67% own a boar. Most of them hire boars from reliable sources and either pay the boar service in cash or the boar owner will take one piglet in exchange.

Table 7. Production and Breeding Management of the Respondents by Type of Pigs Raised, Breed of Pigs Raised, No. of Pigs Raised, Breeding Method, and Source of Boar.

Variable	Category	Frequency	Percentage
Type of pig raised	Breeder	47	13.86
	Fattening	205	60.48
	Breeder/Fattening	87	25.66
Breeding method	Natural Mating	108	80.60
	Artificial Insemination	26	19.40
Source of boar	Within the pigpen	21	15.67
	Rental/Sharing	87	64.93
	Artificial Insemination	26	19.40
Breed of pigs raised	Purebreed	67	19.76
	Mixed	272	80.24
No. Of pigs raised	1-5	239	70.50
	6-10	67	19.76
	11-15	21	6.19
	16-20	12	3.54

Problems Encountered and the Common Solutions Applied

Health Problems

Table 8 presents the health-related problems encountered by the respondents in backyard swine production and the common solutions applied. In the whole 2nd district Negros Occidental scours (69.32%) were the most common health problems affecting the swine. It was the topmost health problem observed in both Sagay and Manapla. In contrast, respiratory problems (12.98%) appeared to be the top concern of the hog raisers in Cadiz City regarding their swine's health.

When the pigs were affected by scours, 36.17% provided anti-scours water-soluble powder, 27.66% injected antibiotics, 23.40% asked for help from their swine technician, and 7.66% asked for treatment recommendations from an agrivet store personnel. Moreover, when confronted with swine fever, the respondents take the following actions: ask for help from a swine technician (51.11%), ask for treatment recommendations from an agrivet store personnel (31.11%), provide traditional treatment (8.89%), and provide injectable treatment (8.89%).

For respiratory problems, the most common solutions are: seeking assistance from a swine technician (61.36 percent), seeking treatment recommendations from agrivet store personnel (27.27%), and injecting antibiotics (6.82%). When it comes to skin disease problems, the most common solutions used by respondents are to seek assistance from a swine technician (40%), provide traditional treatment (20%), treat with sulfur powder (20%), and disinfect the pigpen (20%).

Table 8. The health problems encountered by the backyard swine raisers in the 2nd district of Negros Occidental.

Health Problems	Common Solution Applied	Frequency	Percentage
Respiratory problems		44	12.98
	Ask help from a swine technician	27	61.36
	Ask treatment recommendations from agrivet store personnel	12	27.27
	Inject antibiotics	3	6.82
	Others	2	4.55
Skin problems		10	2.95
	Ask help from a swine technician	4	40.0
	Provide traditional treatment	2	20.0
	Treat using sulfur powder	2	20.0
	Disinfect the pigpen	2	20.0
Scours		235	69.32
	Provide anti-scours, water-soluble powder	85	36.17
	Inject antibiotics	65	27.66
	Ask help from a swine technician	55	23.40
	Ask treatment recommendations from agrivet store personnel	18	7.66
	Others	12	5.11
Swine fever		45	13.27
	Ask help from a swine technician	23	51.11
	Ask treatment recommendations from agrivet store personnel	14	31.11
	Provide traditional treatment	4	8.89
	Provide injectable medication	4	8.89

Production Problems

Table 9 presents the production problems of the backyard swine raisers and the solutions they apply. Among the respondents' production issues encountered, expensive commercial feeds (48.38%) were considered the number one problem in district II. The result shows that expensive commercial feed is the main production problem of backyard swine raisers in Cadiz City. While in Sagay City and the municipality of Manapla, lack of capital (44.84%) is the leading production problem encountered. Respondents use a variety of strategies to deal with expensive feeds, with the majority adding swill and crop residues to the feeds (42.68), shifting to cheaper commercial feeds (28.05%), restricting or limiting the number of feeds given (19.51%), and some crediting feeds from agrivet stores (7.32%) to feed their hogs.

Lack of capital is another major issue for backyard swine raisers. To cope with this issue, the majority of the respondents borrow money from their family and friends (31.58%), loan money from lending (30.92%), and choose to raise fewer heads of pigs (25.66%). Some prefer to temporarily stop the operation (7.24%) while finding enough capital to sustain the production. Lack of training on swine production is also a problem for some respondents. To address this issue, the majority of respondents (44.44%) seek assistance from a swine technician, while others inquire

or ask for help from co-raisers with more swine-raising experience (27.78%), and some watch swine production videos online (27.78%).

Table 9. The production problems encountered by the backyard swine raisers in the 2nd district of Negros Occidental.

Production Problems	Common Solution Applied	Frequency	Percentage
Expensive commercial feeds		164	48.38
	Add swill and crop residues to the feeds	70	42.68
	Shift to cheaper commercial feeds	46	28.05
	Restrict the amount of feeds given	32	19.51
	Loan feeds from agrivet stores	12	7.32
	Others	4	2.44
Lack of capital		152	44.84
	Borrow money from family and friends	48	31.58
	Loan money from lending	47	30.92
	Raise just a few heads of pigs	39	25.65
	Temporarily stop the operation while looking for additional capital	11	7.24
	Others	7	4.61
Lack of training on swine raising		18	5.31
	Ask assistance for a swine technician	8	44.44
	Ask help experienced co-raisers	5	27.78
	Watch videos about swine production online	5	27.78
No problem encountered		5	1.47

Market Problems

According to the data in table 12, the main concern for most backyard swine raisers in the district is the low market value of pigs (52.33%). This problem appeared as the leading market problem among the three localities in district II, Negros Occidental. In addition to this are the inefficient marketing (23.11%) and the lack of sure buyers of pigs at the time of harvest (22.42%). There are a few individuals who declare that they have no problems marketing their pigs (3.54%).

When the market value of pigs is low, respondents preferred to butcher their hogs and sell the meat on credit to neighbors at a higher price (58.96%). They can earn more money this way than if they sold the pigs alive, but the disadvantage of this technique is that the neighbors may not pay. Others deal with this issue by looking for more potential buyers and basing their decisions on the highest price offered (23.12%). Others cope by finding regular buyers rather than dealing with middlemen (9.83%). Few respondents were left with no choice but still sell the pigs (8.10%) despite the very low price.

About inefficient marketing, many raisers (58.97%) continue their production despite gaining no profit. However, they make sure to utilize their learnings from previous experience to become more efficient. Other raisers reduce their production expenses (28.08%) by assuring less wastage of feed and other inputs. Some prefer to temporarily stop production (17.95%) due to ineffective marketing.

The data revealed that most of the backyard swine raisers who do not have sure buyers at the time of harvest also butcher their pigs and sell the meat to neighbors on a credit basis but with an increased price (46.05%). Some respondents have learned that they must look for buyers before harvest (31.58%) so that when the pigs reach their marketable age or weight, there are already sure buyers waiting. Another solution of the respondents is to build a good relationship with clients to have regular buyers (22.37%) so that they do not have to worry about selling the pigs.

Table 10. The market problems encountered by the backyard swine raisers in the 2nd district of Negros Occidental.

Market Problems	Common Solution Applied	Frequency	Percentage
The low market value of pigs		173	51.03
	Sell the pork to neighbors on credit arrangement but with increased price.	102	58.96
	Look for more possible buyers and deal with the highest price offered	40	23.12
	Find regular buyers instead of having transactions with middlemen.	17	9.83
	No choice; still sell the pigs	14	8.09
Inefficient marketing		78	23.01
	Continue production and apply the learnings from previous experience	46	58.97
	Reduce production expenses	18	23.08
	Temporarily stop the production	14	17.95
Lack of sure buyers at the time of harvest		76	22.42
	Sell the pork to neighbors on credit arrangement but with increased price	35	46.05
	Look for buyers before the time of harvest	24	31.58
	Build a good relationship with clients to have regular buyers	17	22.37
No problems encountered		12	3.54

The Primary constraint in the Philippine swine sector remains African swine fever (USDA, 2021). The 2019 ASF epidemic has had a significant impact on the Philippines' hog population. Despite considerable reductions in ASF incidence, the virus has never been eliminated in the country. As of January 2022, there are still active cases of ASF reported (DA Communications Group, 2022).

This study revealed that some management practices of respondents might cause the entry of ASF to the area, such as swill feeding and the boar for hire servicing. According to Food and Agriculture (2001), the swill feeding of food crops containing imported animal products is a crucial means by which ASF may be brought into a country. The threat of ASF can be reduced by prohibiting pigs from being fed swill or properly heating swill (Kolbasov et al., 2017). Moreover, most backyard swine raisers use a boar-for-hire servicing in breeding their sow. In this case, biosecurity measures become even more critical. According to Andico & Peña (2019), African swine fever could immediately spread in areas with low biosecurity measures. According to FAO (2001), the most significant resource in ASF or other livestock disease prevention is an informed animal owner. Pig owners at all production levels should ASF and know what to do when they suspect it. However, the study showed that no respondents had attended seminars regarding African swine fever.

In terms of the problems encountered, it can be observed that the backyard swine raisers in the 2nd district of Negros Occidental were not heavily affected by the challenges brought by the African swine fever because the

province of Negros Occidental is an ASF free province and has an ordinance that forbids the entry of pork from ASF-affected regions (Gomez, 2022).

CONCLUSION AND RECOMMENDATION

From this study, it is concluded that most of the backyard swine raisers in northern Negros are struggling in swine production due to a lack of capital, technical know-how in swine raising, the occurrence of disease, and expensive commercial feeds, and low market value of pigs. These serve as major limiting factors for pig production and affect their capabilities to sustain their operation. So it is recommended that relevant training must be conducted among backyard swine raisers in the 2nd district of Negros Occidental to equip the backyard hog raisers with knowledge and skills regarding swine production. In addition, the government should offer financial programs for backyard swine raisers to help them sustain and expand their production.

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APPENDICES

Appendix 1. List of City or Municipality in Negros Occidental District II, the number of households, and the proportionately allocated sample size.

City/Municipality	No. of Households	Sample size
Cadiz	35,657	172.6 or 173
Sagay	33,488	162.16 or 162
Manapla	13, 038	63.13 or 63
	N= 82, 193	**n= 398**

Appendix 2. Validation Sheet

INDICATOR	RATINGS
1. The instruction of the questionnaire is easy to understand by the respondent.	4.2
2. The questionnaire is easy to administer.	4.2
3. The questionnaire has a reasonable length for the respondent to answer.	4.2
4. The questionnaire's items are appropriate for the level of understanding of the respondents.	4.4
5. The contents are relevant to the study.	4.4
6. The questionnaire's items are clearly stated.	4.2
7. The questionnaire's items are focused on what they intend to measure.	4.4
8. The instrument is not offensive to the intended respondents and/or any member of the community.	4.4
Total	4.3